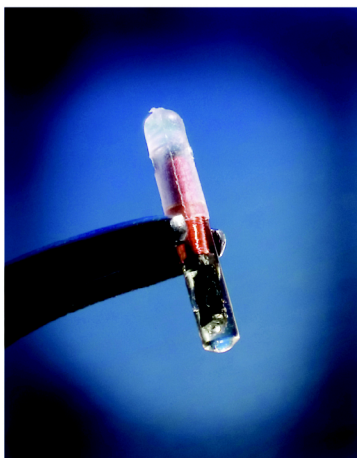


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Microchip Implants: Answers to Frequently Asked Questions



Topics include:

- Human and Animal Implants
- Cancer
- Privacy/Security Problems
- Big Brother Implications
- Cultural and Religious Issues
- What You Can Do

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I. OVERVIEW OF THE VERICHIP HUMAN IMPLANT

Q. What is the VeriChip human implant?

The VeriChip human implant, or VeriChip, is a glass-encapsulated RFID microchip designed for implantation in the human body. The VeriChip is designed to remain permanently embedded under the skin. It is sold and marketed by VeriChip Corporation of Delray Beach, Florida.

The VeriChip consists of a Radio Frequency Identification or "RFID" integrated circuit (aka a microchip), a capacitor, and an antenna wrapped around a ferrite core. These components are sealed in a capsule of medical-grade glass. The glass capsule is partially coated in a porous polypropylene substance called Biobond in an effort to prevent the device from migrating within the body.

Q. What is the purpose of the VeriChip and how does it work?

The VeriChip Corporation markets the implant as a method of accessing medical records in an emergency, for use as a payment device, and as a way to control access to secure facilities.

When a VeriChip scanner is brought within range of an implant, the scanner emits a radio signal that stimulates the implant, causing it to emit its own radio signal in response. That signal is picked up by the scanner and converted into a unique 16-digit identification number. The number is used to identify the individual or to call up a related record.

Q. What information is stored on a VeriChip?

At present, the VeriChip implant contains only a unique 16-digit identification number. This number is similar to a social security number or a bar code number that can be used to look up a record in a database.

Q. How is the VeriChip inserted into the body?

Implantation is an outpatient procedure that typically takes 15 minutes or less. People have been implanted in doctors' offices, at convention booths, and even in European night clubs.

The implantation site, typically the arm, is first wiped with an alcohol swab and numbed with an injection of a local anesthetic. When the area is numb, a 12-gauge, preloaded hypodermic syringe known as a cannula is inserted into the flesh and depressed, where it releases the implant into the subcutaneous tissue.

Q. Where on the body is the VeriChip injected?

The VeriChip is typically injected into the flesh of the triceps of the arm between the elbow and the shoulder. In some cases the implant is injected into the biceps muscle, between the elbow and wrist. (Sean Darks of CityWatcher appears to have had the VeriChip implanted in the biceps.)

There are also "hobbyists" who have chipped themselves with RFID implants obtained from other sources, typically using implants sold for animal use. Several of these individuals have inserted the chips into their hands. As Amal Graafstra, one such individual put it, "It's a

lot easier to open your door or unlock your car by waving your hand rather than by wiggling your bicep." ¹

Q. How many people have received VeriChip implants?

When the VeriChip Corporation became a publicly traded company in early 2007, it disclosed that 222 people in the United States had been implanted with its product. At the beginning of 2008, that figure was estimated to be around 300 people. Many of the implanted individuals are employees of the VeriChip Corporation or patients participating in experimental trials of the device.

The VeriChip Corporation has publicly stated that "several thousand" people throughout the world have been implanted with its product. However, the company has not released details on overseas implantation and has provided no independent verification of these figures.

Q. Are other companies marketing implantable RFID microchips for human use?

Not to our knowledge. The VeriChip Corporation routinely bills the VeriChip as "the only implantable RFID technology with FDA approval," and we are not aware of any other implantable RFID product being manufactured or marketed for identification, access control, or payment purposes.

Q. I've heard the VeriChip is a passive RFID device. What does that mean?

A "passive" RFID device does not have a battery or other internal power source. It derives its power from the signal sent by the reader or scanner that reads it. In contrast, an "active" RFID device has a battery or other power source that enables it to send out its signal continuously, or on command, whether a reader is present or not. Active RFID tags have a longer read range than do passive tags, but they eventually stop transmitting when the battery wears out. Passive tags, in contrast, can theoretically transmit indefinitely.

Q. What is the read range of a VeriChip?

The read range on a VeriChip implant is about three to 12 inches when a hand-held scanner is used. This means the scanner must be brought within 3" to 12" of the chipped body part in order to read the VeriChip and capture its information. When a larger antenna is used, such as a doorway portal application, the read range can be theoretically expanded to around three feet. Given the laws of physics, it is not feasible to read a VeriChip implant from a much greater distance.

¹ <http://www.spectrum.ieee.org/mar07/4940>

II. OVERVIEW OF MICROCHIP IMPLANTS FOR PETS

Q. What is a microchip implant for animals?

A microchip implant for animals is essentially the same as a human microchip implant. It is a glass-encapsulated RFID microchip designed to be implanted into living flesh. The device consists of a Radio Frequency Identification or "RFID" integrated circuit (aka a microchip), a capacitor, and an antenna, sealed in a capsule of medical-grade glass. The glass capsule is partially coated in a porous polypropylene substance to encourage the formation of tissue to prevent migration within the body.

Since the early 1990's, implants have been marketed and sold for use in dogs, cats and other pets, horses, laboratory animals, livestock, and wild salmon. The implant is designed to remain permanently embedded under the skin of the animal.

Q. What is the purpose of an animal implant and how does it work?

The implant is marketed as a way to identify animals.

It works in the same way as the human implant previously described. When a scanner is brought within range of the implant, the scanner emits a radio signal that stimulates the implant, causing it to emit its own radio signal in response. That signal is picked up by the scanner and converted into a unique identification number. The number is used to identify the animal or call up a related record.

Q. Where is the microchip typically injected?

In dogs and cats, chips are inserted in the subcutaneous tissue, generally between the shoulder blades or on the left side of the neck. Horses are typically implanted in the nuchal ligament on the left side of the neck, halfway between the poll and withers.

Q. How many animals have received microchip implants in the U.S.?

In the last decade, millions of wild salmon have been implanted with RFID microchip devices to track their movement through waterways. Countless laboratory animals have also been implanted, and many farm animals across the world are being microchipped, as well.

Close to 5% of the United States' estimated 164 million dogs and cats have microchips in their flesh. Animal shelters around the United States routinely chip pets before releasing them for adoption. In addition, governments, including those of Los Angeles County, and El Paso, Texas, have passed ordinances requiring that all dogs under their jurisdiction be microchipped. El Paso has extended the chipping mandate to cats and ferrets.

Q. Can the microchip help locate a lost pet?

Not in the way many people think. The microchip implant does not have GPS capability to locate a missing pet, nor does it use a satellite. The read range on a VeriChip implant is only about three to 12 inches, so a scanner would have to be very close to an animal to read the implanted chip.

A microchip implant can help recover a pet if — and only if — the pet winds up at an animal shelter or a veterinarian's office. When shelter staff members find a stray animal, they first check to see if the animal is wearing a collar. If there is no collar, workers run an RFID reader over the animal's body to look for a microchip implant. If the pet has been chipped,

the implant will emit a numerical code that can be looked up in a registry to identify and contact the owner.

Because the scanner must be brought very close to an animal in order to read its RFID implant, the implant would not help find a pet that has been lost in the woods or gotten loose on a city street.

Q. Are there different brands of pet microchips?

Yes, there are four main types of microchips that have been marketed for use in pets:

- ISO Conformant Full-Duplex chip²
- AVID Secure/Encrypted "FriendChip"³
- U.S. HomeAgain®, AVID "Eurochip": or FECAVA⁴
- "Trovan Unique" and Current AKC CAR chips⁵

These chips are generally incompatible. One type of reader may not be able to read a competitor's microchip. However, some scanners can read multiple chip types.⁶

Q. Who manufactures and sells the pet implants?

Wikipedia provides a fairly good overview of the complex—and often contentious—market for animal implants.

The two companies which dominate the U.S. market -- AVID and HomeAgain® -- both sell microchips which are optimized to operate at a frequency of 125 kHz. This allows the scanner of each to detect the presence of the other's microchip, even if it cannot actually decode the chip's encoded or encrypted ID. Some scanners manufactured by Digital Angel/Destron Corp. and distributed by HomeAgain® for shelter use have for some time been able to both detect and decrypt the AVID 'encrypted' ID chip.

Digital Angel/Destron Corp. seems to have been the first, after AVID itself, to join the group of manufacturers who have the secrets needed to recover the registration codes from these chips. Still, some of the Digital Angel/Destron models, (often those used by vets rather than shelters) may only flash an acknowledgment that an AVID chip has been found, with no number given. AVID's base scanner model, however, doesn't even bother to give an indication of the presence of a chip of the type used by HomeAgain®, even through no secrets are needed to fully decode these. A more deluxe AVID scanner model reads both kinds.

In 2004, when Banfield Pet Hospitals began selling Crystal Tag microchips in the U.S. -- chips made by Switzerland-based DATAMARS, and following ISO standards -- not enough scanners were distributed to ensure that these chips could be detected. Customers were not aware that far fewer shelters and clinics were equipped to detect these chips than the other types. Later Banfield advocated double-chipping.

2 See: http://en.wikipedia.org/wiki/ISO_11784_%26_11785

3 See: <http://www.avidmicrochip.com/products.htm>

4 See: <http://www.avidmicrochip.com/products.htm#eurochip>

5 See: <http://www.trovan.com/productsuni.htm>

6 This list was obtained from the Wikipedia entry, "Microchip Implant (Animal)." Online at http://en.wikipedia.org/wiki/Microchip_implant_%28animal%29

In 2007, when the AKC Companion Animal Registry entered the microchip distribution business, it chose Trovan brand chips. This prompted some to warn that these too were not fully readable by the American scanner infrastructure. One source seems to indicate that many current scanner models don't read the Trovan type.⁷

⁷ *Ibid.*

III. CANCER AND CHIP IMPLANTS

Q. Have implanted microchips caused cancer in animals?

Yes. In a series of scientific studies published between 1996 and 2006, researchers found a link between implanted microchip transponders and cancer in laboratory animals. Between 1% and 10% of mice and rats implanted with the chips for identification purposes were later afflicted with sarcomas, fibrosarcomas, and other invasive cancers surrounding or attached to the implants. The fast-growing, malignant tumors often metastasized (spread) to internal organs, lymph nodes, and musculature and frequently resulted in the death of the animals.

In two confirmed cases—and possibly many more—dogs have also developed cancer surrounding or attached to microchip implants used for identification purposes.

S. Le Calvez et al. / *Experimental and Toxicologic Pathology* 57 (2006) 255–265

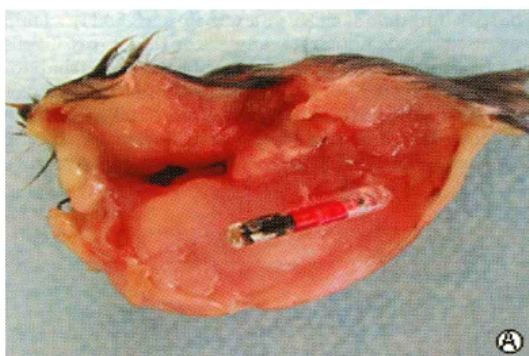


Fig. 1. Gross and microscopic appearance of a microchip-associated tumour. (A) The microchip has been removed from the cavity where it resided in situ (size of microchip 2 × 12 mm).

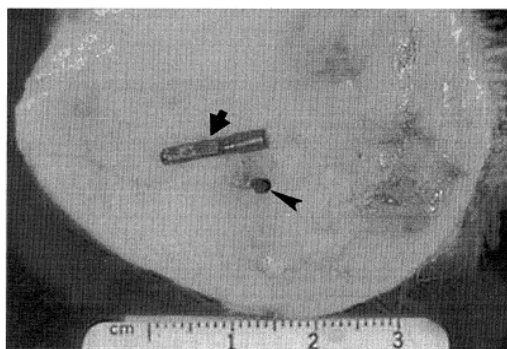


Fig. 2. Gross appearance of a microchip-associated tumor. The microchip (arrow) has been removed from the cavity where it resided in-situ (arrow-head) (female #3102).

Photos of microchip-induced tumors

Left: A malignant tumor found surrounding a microchip implanted in a mouse (Le Calvez et al, 2006) Right: Cross-section of a malignant tumor found surrounding a microchip implant in a rat (Elcock et al, 2001)

Q. Did the microchip implants cause the tumors?

Yes. In nearly all cases, researchers concluded that the microchip implants induced (caused) the malignant tumors found in their studies. Here are some quotes from the scientists involved with the studies:

*"The transponders were the cause of the tumors."*⁸

- Retired toxicologic pathologist Dr. Keith Johnson, in a phone interview with the Associated Press on the findings of a 1996 study he led at the Dow Chemical Co. in Midland, Michigan.

8 Todd Lewan, "Chip Implants Linked to Animal Tumors." *Associated Press*. September 8, 2007. Online at http://www.washingtonpost.com/wp-dyn/content/article/2007/09/08/AR2007090800997_pf.html

*"There was an unequivocal [unmistakable] association between the [microchip implant] and sarcoma."*⁹

- Dr. Kerry Blanchard and colleagues from their 1999 study finding that 10.2% of mice studied developed cancer around the microchips (p. 526)

The tumors *"are clearly due to the implanted microchips."*¹⁰

- Dr. Thomas Tillmann and colleagues, from their 1997 study that found cancers around microchips in 0.8% percent of 4,279 chipped mice (p. 200)

Q. Where did the tumors form in the animals?

In all cases, the cancerous tumors were located at the site of the microchip. The tumors either encased the microchip or were immediately adjacent to it. When scientists examined the tumors microscopically, they found that the tumors originated in the capsule of tissue that formed around the microchips.

*"All tumors were observed...at or near the implantation site...[the tumors] were attached to the implant or partially or totally encased the implant."*¹¹

- Palmer et al. on their 1998 study that found malignant fibrosarcomas in 2% of 800 mice studied (p. 170)

*"The intact microchip was found completely embedded within the [malignant] mass."*¹²

- Vascellari et al, from their 2004 study that found cancer in a dog (p.188)

Numerous other studies reached the same conclusions. These studies, detailing the formation of cancer surrounding microchip implants, are described in detail in our comprehensive review of the research titled "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006."¹³

Q. How does the microchip implant cause cancer?

Researchers have proposed several explanations for the cancerous tumors found around microchip implants in animals, as follows:

- (1) **Foreign-Body Tumorigenesis:** The presence of a foreign body under the skin may cause cellular changes that lead to cancer.
- (2) **Post-Injection Sarcoma:** Inflammation from the chip-injection procedure may give rise to cancer.

9 Blanchard, KT, et al. "Transponder-induced sarcoma in the heterozygous p53+/- mouse." *Toxicologic Pathology*. 1999;27(5):519–527. Scanned copy available at: <http://www.antichips.com/cancer/05-blanchard-et-al-1999.pdf>

10 Tillmann, T, et al. "Subcutaneous soft tissue tumours at the site of implanted microchips in mice." *Experimental and Toxicologic Pathology*. 1997;49:197–200. Scanned copy available at: <http://www.antichips.com/cancer/07-tillmann-et-al-1997.pdf>

11 Palmer, TE, et al. "Fibrosarcomas associated with passive integrated transponder implants." *Toxicologic Pathology*. 1998;26:170. Scanned copy available at: <http://www.antichips.com/cancer/06-palmer-1998.pdf>

12 Vascellari, M, et al. "Liposarcoma at the site of an implanted microchip in a dog." *The Veterinary Journal*. 2004;168:188–190. Scanned copy available at: <http://www.antichips.com/cancer/03-vascellari-et-al-liposarcoma-2004.pdf>

13 Albrecht, K. "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006." Online at: <http://www.antichips.com/cancer/albrecht-microchip-cancer-full-paper.pdf>

(3) **Possible Genotoxic Properties of the Implant:** The microchip may have carcinogenic properties or cause the body to produce carcinogenic byproducts.

(4) **Radio-Frequency Energy Emissions from the Transponder or Reader:** The radio-frequency energy involved with the device may contribute to tumor formation.

Each of these hypotheses is addressed in greater detail in our comprehensive report on the research titled "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006."¹⁴ However, we currently don't know which, if any, of these hypotheses is correct.

Q. Are the microchips that caused tumors the same as the VeriChip human implant?

Yes, the microchips that caused cancer in animals are virtually identical to the implant being marketed for humans. Digital Angel, the parent company of the VeriChip Corporation, manufactures both the HomeAgain® animal implant and the VeriChip human implant. Both of these devices can be seen in the photograph below.

The microchip at the top is the VeriChip human implant, currently implanted in hundreds of human beings. The microchip below it is the HomeAgain® pet implant, the device that was found encased within a cancerous tumor (liposarcoma) in one dog, and adjacent to a cancerous tumor (fibrosarcoma) in another dog.



Photo: © Liz McIntyre 2006

The only significant difference between the animal microchip and the VeriChip human implant is in the information coded onto their internal microchips. Animal implants generally transmit a 10-digit ID number, while the human implant is encoded to transmit a 16-digit ID number.

The microchips that induced cancer in laboratory animals were sold by BioMedic Data Systems, Inc., but are also nearly identical to the VeriChip human implant. Both contain a microchip and an antenna sealed in a 12 mm cylinder of medical-grade glass. Both are partially encased in a polypropylene anti-migration sheath. Both are injected into the flesh with a 12-gauge needle.

Human and Animal Implants Compared

Left: A VeriChip human implant manufactured by Digital Angel appears at the top of this photo. Directly below it is Digital Angel's animal chip, marketed under the HomeAgain® brand name in the U.S., and other brand names overseas. A grain of rice and a dime are shown for scale.

Q. I'd like to examine the evidence myself. Where can I find the original research studies?

The studies were originally published in a variety of pathology, veterinary and toxicology journals between 1996 and 2006. The author of this FAQ, Katherine Albrecht, Ed.D., has authored a comprehensive, 52-page report on the studies that has been posted on the AntiChips.com website

¹⁴ Albrecht, K. "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990-2006." Online at: <http://www.antichips.com/cancer/albrecht-microchip-cancer-full-paper.pdf>

and is freely available for distribution.¹⁵ In addition, we have scanned the full text of the original research articles and made them available on our website.¹⁶

Q. Should humans be worried about developing cancer from microchip implants?

The fact that rodents and dogs have developed cancer around implanted microchips does not necessarily mean that humans will do the same. However, prior research indicates that humans are subject to malignant tumors in response to foreign-body implants. In a small number of cases, highly aggressive sarcomas and carcinomas have developed in humans around pacemakers and other implanted devices.

Most of the malignant, microchip-induced tumors found in rodents were classified as sarcomas – soft tissue cancers. Although soft tissue sarcomas are rare in humans, they are responsible for more deaths than testicular cancer, Hodgkin's disease, and thyroid cancer combined. They are also notorious for recurring and metastasizing—often with devastating results.

It should be noted that the same company that manufactures the VeriChip human implant also produced and sold the virtually identical microchips that were associated with cancer in dogs.

Since the microchip implant procedure has only been performed on humans since 2001, and only in a small number of individuals, very little is known about the long-term response to the implant in human beings. According to several people who have received implants, the VeriChip Corporation had no formal follow-up procedure in place to monitor patient response to the devices.

¹⁵ *Ibid.*

¹⁶ A table with a summary, detailed overview, and original article for each of the 11 articles reviewed by the Associated Press can be found on our website at:

http://www.antichips.com/cancer/index.html#Research_Article_Tables

IV. THE CANCER CONTROVERSY: DOUBLESPEAK FROM VERICHIP AND THE MAKERS OF THE HOMEAGAIN® PET IMPLANT

Q. How has the VeriChip Corporation responded to the cancer issue?

Since research linking the implantable microchip to cancer first received widespread public attention in September 2007 (see the previous section of this document for details on chip-induced cancer), representatives of the VeriChip Corporation and its affiliate companies have made a number of inaccurate statements to the media about the findings. This section addresses those statements in detail.

Q. What are some of the inaccurate statements made by microchip company executives?

The VeriChip Corporation and its affiliate companies Digital Angel and Destron Fearing have made numerous misstatements about the cancer studies to Business Week¹⁷, Time Magazine¹⁸, the RFID Journal¹⁹, and other media outlets. Perhaps the lengthiest and most incriminating of these statements was made by VeriChip CEO Scott Silverman in an article he authored for Business Week magazine in January 2008. The article, titled "Myths About Implantable Chips,"²⁰ contained numerous false assertions that are reprinted below. A brief correction is provided beneath each statement, with greater detail provided in subsequent Q&A passages.

Mr. Silverman wrote:

"Last year a story was published by the Associated Press alleging implantable microchips cause cancer—an accusation we firmly dispute. This story referred to three studies that linked implantable microchips to malignant tumor formation."

That number is inaccurate. The AP actually reviewed eight studies that linked implantable microchips with cancer.

"It is important to point out that none of these studies was designed to investigate the microchip as a cause of tumor growth and the findings were incidental to the research."

17 Scott Silverman, "Myths About Implantable Chips." *Business Week*, January 30, 2008. Online at: http://www.businessweek.com/technology/content/jan2008/tc20080130_112001.htm?chan=top+news_top+news+index_technology

18 Siobhan Morrissey, "Are Microchip Tags Safe?" *Time Magazine*, October 18, 2007. Online at: <http://www.time.com/time/health/article/0,8599,1672865,00.html>

19 Claire Swedberg, "VeriChip Defends the Safety of Implanted RFID Tags," *RFID Journal*. September 12, 2007. Online at: <http://www.rfidjournal.com/article/articleprint/3609/-1/1/>

20 Scott Silverman, "Myths About Implantable Chips."

Although this is technically accurate since investigators discovered the cancer in the course of other research, it is hardly "important" since it has no bearing on the published findings.

"It is also important to note that these studies used mice and rats specially bred and altered to increase their susceptibility to cancers."

That statement is inaccurate. Only one of the six rodent studies that found cancer involved genetically modified mice. What's more, since the modified mice had been bred to develop cancer only in the presence of specific toxins, the high rate of cancer in those mice is particularly damning evidence against the implants.

"It is also critical to note that as part of the primary design of the studies, the mice and rats were exposed to various cancer-causing agents such as X-ray radiation and chemical carcinogens."

This is misleading and irrelevant. Both experimental and control animals (animals with no exposure to chemical or x-ray agents) developed cancer from the microchips.

"It is therefore impossible from these three studies to relate any tumor growth directly to the implanted microchips."

That is not true. The researchers themselves clearly state that the microchips induced the tumors.

"The medical profession and those familiar with laboratory research understand these very important differentiators and the public must as well."

On the contrary, members of the medical community, including Dr. Robert Benezra, head of the Cancer Biology Genetics Program at the Memorial Sloan-Kettering Cancer Center in New York, and Dr. George Demetri, director of the Center for Sarcoma and Bone Oncology at the Dana-Farber Cancer Institute, were among the medical professionals alarmed by the cancer findings.²¹

"Most importantly, the FDA continues to support its approval of the product."

The evidence suggests that the FDA (the U.S. Food and Drug Administration) was not aware of the cancer studies when it approved the VeriChip implant for human use in 2004.

The following questions address the issues raised by VeriChip and its affiliate companies in Business Week, Time Magazine, and elsewhere.

Q. Did the Associated Press review only three articles as Mr. Silverman claimed?

No. Although Scott Silverman erroneously claimed in his Business Week article that the Associated Press reviewed just three studies,²² the AP actually reviewed eight studies linking

²¹ Todd Lewan, "Chip Implants Linked to Animal Tumors." *Associated Press*. September 8, 2007. Online at http://www.washingtonpost.com/wp-dyn/content/article/2007/09/08/AR2007090800997_pf.html

microchip implants to cancer.²³ Six of the reviewed articles reported that laboratory mice and rats had developed malignant tumors around microchip implants, and two additional articles reported that dogs had developed cancer surrounding or attached to implants.

These eight articles are discussed in the previous section of this FAQ, and they are examined in great detail in our comprehensive overview of the research titled "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006."²⁴

Q. Were the cancer studies conducted in tumor-prone animals?

No. In five of the six studies in which lab animals developed cancer, ordinary laboratory rodents were used. These rodents are bred for uniformity and hardiness, and are used in cancer studies for their ability to respond to carcinogenic substances while remaining relatively free from spontaneous tumors that are unrelated to carcinogenic test substances. When they develop cancer, it is a strong indication of exposure to cancer-causing agents—which is precisely the reason they are used for cancer studies.

Details on the exact strain of animal used in each of the studies are provided in a table in our comprehensive overview of the research titled "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006."²⁵

The two cases in which dogs developed cancer from the microchip involved a French bulldog and a mixed breed dog. These dogs were household pets with no special propensity for developing tumors.

Q. Weren't the genetically modified mice used in one study specially bred to produce tumors?

No. The p53+/- mice used in the 1999 Blanchard study are not "specifically bred to produce tumors" as VeriChip has claimed. Rather, they are genetically modified to have an increased susceptibility to cancer only when exposed to genotoxins, or substances that damage genetic material. These mice are not known to develop spontaneous tumors in the absence of genotoxins within the first six months of life, which is when the mice in the study developed the microchip-induced tumors.

The high rate of cancer development in these mice (10.2%) in just six months strongly suggests that implanted microchips may either be genotoxic or may generate genotoxic byproducts in the host that can give rise to cancer.²⁶ The researchers stated as much, writing, "the presence of the foreign body [microchip implant] may elicit tissue reactions capable of generating genotoxic byproducts."²⁷

The extraordinarily high rate of cancer in these mice is a disturbing finding that raises a serious red flag about the safety of the microchip.

22 Scott Silverman, "Myths About Implantable Chips." *Business Week*, January 30, 2008.

Online at: http://www.businessweek.com/technology/content/jan2008/tc20080130_112001.htm

23 Todd Lewan, "Chip Implants Linked to Animal Tumors."

24 Albrecht, K. "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006." Online at: <http://www.antichips.com/cancer/albrecht-microchip-cancer-full-paper.pdf>

25 *Ibid.*

26 Blanchard, KT, et al. "Transponder-induced sarcoma in the heterozygous p53+/- mouse." *Toxicologic Pathology*. 1999;27(5):519–527. Scanned copy available at: <http://www.antichips.com/cancer/05-blanchard-et-al-1999.pdf>

27 *Ibid.* p. 526.

Q. Could the cancers have been caused by other chemicals instead of the microchip?

No. It is clear that the malignant sarcomas that formed around the microchips were caused by the microchips themselves, not by other chemical compounds that were administered to some of the animals. We know this because both control and experimental animals developed cancers around the implants. In other words, animals that were not exposed to any chemicals at all developed cancer around the microchips.

In several of the studies, researchers had not initially set out to investigate the effects of microchip implants. Instead, they were looking at the safety of various chemical compounds. As a routine procedure, they microchipped all of the animals for identification purposes, then set a number of them aside to serve as a control group while they administered experimental compounds to the rest. After a period of time, the researchers were startled to find that animals in both the control and experimental groups had developed malignant tumors around the microchips. They found these chip-induced cancers so significant that they published their findings, even though that outcome was not what they had initially set out to investigate.

Q. Is it true, as VeriChip claims, that no link can be made between the tumors and the implanted microchips?

No. As discussed earlier in this document, the researchers themselves clearly stated that the tumors were caused by the microchips. They are quite firm on this point.

*"The transponders were the cause of the tumors."*²⁸

- Retired toxicologic pathologist Dr. Keith Johnson, in a phone interview with the Associated Press on the findings of a 1996 study he led at the Dow Chemical Co. in Midland, Michigan.

*"There was an unequivocal [unmistakable] association between the [microchip implant] and sarcoma."*²⁹

- Dr. Kerry Blanchard and colleagues from their 1999 study finding that 10.2% of mice studied developed cancer around the microchips. (p. 526)

*The tumors "are clearly due to the implanted microchips."*³⁰

- Dr. Thomas Tillmann and colleagues, from their 1997 study that found cancers around microchips in 0.8% percent of 4,279 chipped mice. (p. 200)

Q. Is it true the tumors were benign and not harmful?

No, it is not true. Benign means non-cancerous. The tumors found in lab animals were not benign. They were malignant sarcomas, fibrosarcomas, and other deadly forms of cancer. The microchip-induced tumors were fast-growing, malignant cancers that often led to a rapid death in the animals they afflicted. In fact, most of the animals that developed microchip-

28 Todd Lewan, "Chip Implants Linked to Animal Tumors." *Associated Press*. September 8, 2007. Online at http://www.washingtonpost.com/wp-dyn/content/article/2007/09/08/AR2007090800997_pf.html

29 Blanchard, KT, et al. "Transponder-induced sarcoma in the heterozygous p53+/- mouse." *Toxicologic Pathology*. 1999;27(5):519–527. Scanned copy available at: <http://www.antichips.com/cancer/05-blanchard-et-al-1999.pdf>

30 Tillmann, T, et al. "Subcutaneous soft tissue tumours at the site of implanted microchips in mice." *Experimental and Toxicologic Pathology*. 1997;49:197–200. Scanned copy available at: <http://www.antichips.com/cancer/07-tillmann-et-al-1997.pdf>

associated tumors died prematurely as a result of the tumors, as these researchers' statements attest:

*"Most of the animals with microchip-associated tumors died prematurely"*³¹

— Researcher Sophie Le Calvez and colleagues (p. 258)

*"Electronic microchip technology ...may affect animal moribundity and mortality [i.e., illness and death rates], due to the large size and rapid growth of microchip-induced tumors as well as the occurrence of metastases."*³²

— Researcher Laura Elcock and colleagues (p. 491)

*"Most tumors arising from foreign bodies are malignant . . . and have a rapid growth rate, killing the animal in a matter of weeks."*³³

— Elcock and colleagues (p. 491)

Q. Have there been studies in which chipped animals did not develop cancer?

Yes, several studies in which chipped animals did not develop cancer have been cited as evidence that implantable microchip devices are safe (see Table 1 below). However, those studies either involved a very small number of animals or the animals were only observed for a very short period of time. In most of the studies where cancer was found, it occurred during the second year of exposure to the device, or in the latter half of the animal's lifespan. Animals would not be expected to develop cancer after only a few days or weeks of exposure.

TABLE 1: Studies in which microchip-induced cancer was not found

Author(s)	Species	# animals	Length of Exposure	Cancer rate
Murasugi et al., 2003	dogs	2	3 days	none observed
		2	3 months	
		2	1 year	
		2	3 years	
		1	6 years	
Ball et al., 1991	rats	10	2 weeks	none observed
		10	3 months	
		10	6 months	
		10	1 year	
Rao & Edmondson, 1990	mice	10	3 months	none observed
		10	15 months	
		39	less than 2 years	
		74	2 years	

31 Le Calvez, S, Perron-Lepage, M-F, Burnett, R., "Subcutaneous microchip-associated tumours in B6C3F1 mice: A retrospective study to attempt to determine their histogenesis." *Experimental and Toxicologic Pathology*. 2006;57:255–265. et al., 2006. Scanned copy available at: <http://www.antichips.com/cancer/01-le-calvez-et-al-2006.pdf>

32 Elcock, LE, et al. "Tumors in long-term rat studies associated with microchip animal identification devices." *Experimental and Toxicologic Pathology*. 2001;52:483–491. Scanned copy available at: <http://www.antichips.com/cancer/04-elcock-et-al-2001.pdf>

33 *Ibid*.

In contrast, when researchers looked at thousands of animals over longer periods of time they consistently found cancer in connection to the microchips, as Table 2 illustrates.³⁴

TABLE 2: Studies that found microchip-induced cancer

Author(s)	Species	# animals	Length of Exposure	Cancer rate
Le Calvez et al., 2006	mice	1,260	2 years	4.1%
Vascellari et al., 2006	dog	N/A	7 months (at age 9)	1 dog
Vascellari et al., 2004	dog	N/A	18 months (at age 11)	1 dog
Elcock et al., 2001	rats	1,040	2 years	0.8%
Blanchard et al., 1999	mice	177	6 months	10.2%
Palmer et al., 1998	mice	800	2 years	2.0%
Tillmann et al., 1997	mice	4,279	lifespan	0.8%
Johnson, 1996	mice	2,000	2 years	~1.0%

Q. Was the FDA aware of the cancer link when it approved the VeriChip for human use?

Based on the available evidence, it appears the FDA was not aware of the cancer studies. When the FDA approved the VeriChip for human use in October 2004, it relied on the company to disclose any risks associated with the device.³⁵ It was VeriChip's responsibility to alert the FDA to the cancer findings and provide copies of the studies to the FDA for review. However, since VeriChip senior executives have publicly stated that neither they nor the company knew about the studies at that time, they could not possibly have provided them to the FDA.

VeriChip's CEO Scott Silverman and its chief medical officer Dr. Jonathan Musher have both stated that they had no knowledge of the cancer studies before the Associated Press broke the story in September 2007. In a written statement to the Associated Press, Mr. Silverman stated that his company was "not aware of any studies that have resulted in malignant tumors in laboratory rats, mice and certainly not dogs or cats."³⁶ He later reaffirmed the denial during a national television interview on ABC's "Good Morning America" in September 2007.³⁷ VeriChip's Chief Medical Officer Dr. Jonathan Musher also denied any knowledge of the studies in a 2007 interview with the Atlanta CBS television affiliate, WGCL.³⁸

34 These tables are also available online at

http://www.antichips.com/cancer/index.html#Research_Article_Tables

35 At the time, the VeriChip Corporation was doing business under the name "Applied Digital Solutions," and filed the FDA application in that name.

36 Todd Lewan, "Chip Implants Linked to Animal Tumors." *Associated Press*. September 8, 2007. Online at http://www.washingtonpost.com/wp-dyn/content/article/2007/09/08/AR2007090800997_pf.html

37 "Microchips Linked to Cancer in Animals: Study Raises Questions About Risks to Humans Who Have Had the Chips Implanted" ABC's *Good Morning America*, September 11, 2007. Online at: <http://abcnews.go.com/GMA/OnCall/story?id=3580510>

38 Atlanta CBS 46 News, November 2007. Online at: <http://www.youtube.com/watch?v=oQMby-z7tGk>

Q. Did the VeriChip Corporation (then operating as "Applied Digital Solutions") intentionally fail to provide the cancer studies to the FDA?

Yes, it appears that VeriChip officials intentionally withheld at least two of the cancer studies from their FDA application. Despite repeated claims that the company had no knowledge of any studies linking microchips to cancer, Mr. Silverman later acknowledged to Time Magazine that the company *had* been aware of one of the most damning cancer studies, the 1999 Blanchard study—and intentionally chose to withhold it from the FDA. According to Time Magazine:

"As for the third study [the 1999 Blanchard study in which 10.2% of chipped mice developed cancer around the microchips], Silverman says it was conducted in mice specifically bred to produce tumors,³⁹ and was therefore omitted from the sheaf of studies included in the FDA application."⁴⁰

The company could not have made a decision to omit a study from its FDA application unless it knew that the study existed. And since the company knew of the Blanchard study, it must also have known that researcher Keith Johnson in the course of his own investigations had independently found that "subcutaneous sarcomas at the site of transponder implants were reported in approximately 1% of mice," since that information was clearly printed in the Blanchard article.

Though VeriChip must have been aware of Johnson's research, there is evidence (discussed later in this FAQ) that strongly suggests that VeriChip withheld that study from the FDA as well.

Q. Should the Blanchard study have been included in the FDA application?

Absolutely. According to the authors of the study, the high rate of cancer development (10.2%) in the genetically modified p53+/- mice after just six months of exposure suggests that implanted microchips may have genotoxic attributes or give rise to the production of genotoxins in the host.⁴¹ This raises serious concerns about the safety of the microchip, and could help explain the cancer findings in the other studies. What's more, the Blanchard study contained a reference to the Johnson study in which microchipped mice also developed cancer.

Had VeriChip provided these two studies to the FDA, it is almost certain the agency would have conducted a comprehensive literature review to find all published research related to microchip implants and cancer. That search would have uncovered the Elcock, Palmer, and Tillmann studies, all of which had been published at the time of the VeriChip application in 2004.

In sum, data from the Blanchard study should have been provided to the FDA for careful consideration when the agency was evaluating the safety of microchip implants for use in humans. It was inappropriate, negligent, and deceptive of VeriChip to omit this important information from the FDA application.

39 As discussed previously, the mice were not "specifically bred to produce tumors," but were genetically modified to develop cancer only in the presence of genotoxins.

40 Siobhan Morrissey, "Are Microchip Tags Safe?" *Time Magazine*, October 18, 2007. Online at: <http://www.time.com/time/health/article/0,8599,1672865,00.html>

41 Blanchard, KT, et al. "Transponder-induced sarcoma in the heterozygous p53+/- mouse." *Toxicologic Pathology*. 1999;27(5):519–527. Scanned copy available at: <http://www.antichips.com/cancer/05-blanchard-et-al-1999.pdf>

Q. Is there additional evidence the company did not tell the FDA about the cancer studies?

Yes. Mr. Silverman made statements in his Business Week article that further indicate that the company did not provide any of the cancer studies to the FDA.

He wrote:

During the FDA approval process we provided 34 studies to the FDA demonstrating the safety of implantable microchips.

[Note: It would appear from this statement that the company provided 34 carefully-chosen studies that confirmed the safety of the implant, while failing to provide any of the studies showing a cancer link.]

There have been numerous studies in mice, rats, woodchucks, rabbits, guinea pigs, pigs, and dogs that investigated the microchip and potential adverse effects of inserting it into subcutaneous tissue. None of these studies showed any tumors or other significant problems.

[Note: This statement further confirms that the company did not provide the FDA with any of the studies linking implantable microchips with cancer.]

— Scott Silverman, "Myths About Implantable Chips", Business Week, January 30, 2008.⁴²

Q. Has the FDA been asked whether it reviewed the cancer studies before it approved the VeriChip?

Yes, this question has been asked on multiple occasions, but as of this writing the agency has refused to provide a direct answer. According to the Associated Press (AP), the FDA declined repeated AP requests to specify what studies it reviewed before approving the VeriChip.⁴³ And in October 2004, this researcher (Katherine Albrecht) filed a Freedom of Information Act (FOIA) request with the FDA asking what documents the agency had reviewed during the approval process. More than a year later, the agency responded with a form letter stating that there were no documents on file matching the request.

The AP filed a similar FOIA request in early 2007 and is still awaiting a response.⁴⁴

Q. Have other false or misleading statements been made about the research?

Yes. The following are among the other inaccurate statements Scott Silverman and Destron Fearing have made about the cancer studies.

- The tumors in the Le Calvez study were not malignant
- The tumorous mice in the Tillmann study were "healthy"
- Most of the tumors in the Tillmann study were "benign"

Each of these statements is addressed in the following pages.

42 Online at: http://www.businessweek.com/technology/content/jan2008/tc20080130_112001.htm?chan=top+news_top+news+index_technology

43 Todd Lewan, "Chip Implants Linked to Animal Tumors." Associated Press. September 8, 2007. Online at http://www.washingtonpost.com/wp-dyn/content/article/2007/09/08/AR2007090800997_pf.html

44 Todd Lewan, personal communication.

► **MISSTATEMENT – The tumors in the Le Calvez study were not malignant**

Shortly after AP reporter Todd Lewan broke the cancer story, Digital Angel's chief technology officer Zeke Mejia was interviewed by the RFID Journal. In that interview, Mr. Mejia accused the AP of "misconstruing" the research studies and claimed that the tumors found in one study were not malignant.

"...Mejia says even the studies themselves may have been misconstrued by [AP Reporter Todd] Lewan. One example was a French study, cited in the [AP article], which found that about 4.1 percent of the 1,260 implanted mice developed tumors. Although the study did not state any of the tumors were cancerous, the news story implied they were malignant. Mejia states that such an implication 'was distorting and really sad to hear.'

'I just want to have the truth being published,' Mejia says. And from his standpoint, the truth is that the studies fail to prove any connection between tumors in animals and RFID microchip implants.' ⁴⁵

— RFID Journal, quoting Zeke Mejia, Digital Angel Chief Technology Officer

A month later, VeriChip CEO Scott Silverman made a similar statement to Time Magazine during an exclusive interview with the magazine:

"The second study, conducted in France in 2006, two years after VeriChip's FDA application was approved, found that while 4% of the 1,260 mice in the study developed tumors, none of them were malignant." ⁴⁶

— Time Magazine, citing information provided by VeriChip CEO Scott Silverman

► **FACT – The tumors were malignant sarcomas that killed many of the animals**

The statements are false. Not only were the tumors in the French study malignant, they were deadly. Researcher Sophie Le Calvez and her colleagues were shocked to find that more than 4% of mice they had implanted with microchips developed malignant sarcomas surrounding or adjacent to the implants within two years of exposure. Most of the animals that developed the tumors died prematurely as a result.⁴⁷

The tumors were initially identified by morphology as fibrosarcoma (17 cases), rhabdomyosarcoma (12 cases), leiomyosarcoma (2 cases), malignant fibrous histiocytoma (3 cases), mammary gland adenocarcinoma (2 cases), and other sarcomas (16 cases). Researchers later reclassified the tumors as "sarcomas not otherwise specified (NOS) with a large myofibroblastic component" (p. 255) after additional testing. A sarcoma is a malignant tumor of soft tissue that connects, supports or surrounds other structures and organs of the body.

45 Claire Swedberg, "VeriChip Defends the Safety of Implanted RFID Tags," *RFID Journal*. September 12, 2007. Online at: <http://www.rfidjournal.com/article/articleprint/3609/-1/1/>

46 Siobhan Morrissey, "Are Microchip Tags Safe?" *Time Magazine*, October 18, 2007. Online at: <http://www.time.com/time/health/article/0,8599,1672865,00.html>

47 Le Calvez, S, Perron-Lepage, M-F, Burnett, R. "Subcutaneous microchip-associated tumours in B6C3F1 mice: A retrospective study to attempt to determine their histogenesis." *Experimental and Toxicologic Pathology*. 2006;57:255–265. Scanned copy available at: <http://www.antichips.com/cancer/01-le-calvez-et-al-2006.pdf>

Once initiated, the malignant tumors grew rapidly. Not only were the tumors malignant, but they often infiltrated nearby muscle tissue, and several metastasized (spread) to cause further cancer in the lungs, liver, pancreas, and stomach of the animals.

Additionally, many of the implants migrated from the original implantation site on the backs of the mice to cause cancer in other parts of the body. Nineteen percent of the cancers found involved microchips that had migrated from the back to the limbs, abdomen, or head of the mice. The animals were literally riddled with cancerous tumors.

► **MISSTATEMENT – The tumorous mice in the Tillmann study were "healthy"**

*"In an exclusive interview with TIME, [VeriChip CEO Scott] Silverman provided [one of the studies] mentioned in the AP article, which showed that less than 1% of 4,279 chipped mice developed tumors 'clearly due to the implanted microchips' but were otherwise healthy, and that 'no clinical symptoms except the nodule on their backs were shown.'"*⁴⁸

— Time Magazine, October 18, 2007

► **FACT – The mice had invasive cancers**

The mice in question had invasive cancer, regardless of any other health problems they may or may not have had. The 1997 Tillmann study, to which this passage refers, reported that of 4,279 mice implanted with microchips, 0.8%, or 36, of them developed malignant cancers that were clearly caused by the microchips. These tumors were identified as being of two main types: fibrosarcomas involving "extensive local invasion of the surrounding tissues," and malignant fibrous histiocytomas with "zones of necrosis and high mitotic activity."⁴⁹ (p. 198)

Not only were the tumors malignant, they often grew to a diameter of an inch or more, as can be seen from a photograph that appeared in the original article.⁵⁰ It would not be accurate to classify mice with large, malignant tumors as "healthy."

► **MISSTATEMENT – Most of the tumors in the Tillmann study were "benign"**

In late 2007, Destron Fearing, manufacturers of the HomeAgain® pet implant, issued a report on the cancer studies that contained the following erroneous statement:

*"The majority of tumors [in the 1997 Tillmann study] were benign fibrosarcomas..."*⁵¹

— Destron Fearing, makers of the HomeAgain® pet implant

48 Siobhan Morrissey, "Are Microchip Tags Safe?" *Time Magazine*, October 18, 2007. Online at: <http://www.time.com/time/health/article/0,8599,1672865,00.html>

49 Tillmann, T, et al. "Subcutaneous soft tissue tumours at the site of implanted microchips in mice." *Experimental and Toxicologic Pathology*. 1997;49:197–200. Scanned copy available at: <http://www.antichips.com/cancer/07-tillmann-et-al-1997.pdf>

50 *Ibid.*

51 Destron Fearing, "Tissue Reactions to Microchip Implantation in Laboratory Animals and Pets," 2007. Online at http://www.verichipcorp.com/files/6143_Sarcomas_Tech_Bulletin1_4_10_2_07.pdf
Cited excerpt can be found at page 2, column 2, paragraph 2.

► **FACT – The tumors were malignant (cancerous) sarcomas**

There is no such thing as a "benign fibrosarcoma." A fibrosarcoma is a type of sarcoma, a malignant tumor of soft tissue that connects, supports or surrounds other structures and organs of the body. It is, by definition, malignant. As discussed earlier, the tumors found in the 1997 Tillmann study were primarily fibrosarcomas and malignant fibrous hystiocytomas—both malignant cancers. The word "benign" does not appear anywhere in the Tillman article.

Dr. Timothy Jennings, an expert on implant-induced cancers in humans has confirmed that there is no disease entity known as "benign fibrosarcoma" and that "any tumor classified as sarcoma should be viewed as malignant."⁵²

52 Dr. Timothy Jennings, personal communication, November 15, 2007.

V. OTHER PROBLEMS WITH HUMAN IMPLANTS

Q. Aside from the cancer issue, does the VeriChip implant pose other medical risks?

Yes. Electrical hazards, MRI incompatibility, adverse tissue reaction, and migration of the implanted transponder are just a few of the potential risks associated with the VeriChip implant, according to an October 12, 2004 letter issued by the Food and Drug Administration (FDA).⁵³

MRI incompatibility is one of the more serious issues identified by the FDA. An MRI machine uses powerful magnetic fields coupled with pulsed radio frequency (RF) fields. According to the FDA's Primer on Medical Device Interactions with Magnetic Resonance Imaging Systems, "electrical currents may be induced in conductive metal implants" that can cause "potentially severe patient burns."⁵⁴ There is also evidence indicating that a VeriChip device may no longer function after exposure to a high power MRI scan.

Q. What is meant by "migration?" Is that a serious concern?

Migration occurs when a microchip tunnels through the flesh to a different part of the body. Chip migration is an ongoing problem for implanted animals, despite the use of a coating designed to anchor the implant. In 1999, a team of researchers (Jansen et al.) found that about half of the transponders inserted into beagle dogs migrated during a four-month study.⁵⁵ The British Small Animal Veterinary Association, which registers adverse reactions to microchips in the UK, reports receiving over 180 complaints of such chip migration in pets.⁵⁶ (Since the registry is voluntary and not all vets participate, it's likely the true number is much higher.) Unfortunately, there is no similar registry in the United States, so migration incidents are not reported in this country.

Significantly, when chips migrate in laboratory animals, they can induce cancer elsewhere in the body, as researcher Sophie Le Calvez discovered. Although her team originally injected chips into the backs of mice, they later retrieved a sizable number of the devices from cancerous lesions in the animals' limbs, abdomens, and heads. A full 19.3% of the cancers they found formed around these so-called "migrating chips."⁵⁷

Q. Have any complaints been filed with the FDA about the VeriChip?

Yes, we are aware of at least one adverse reaction report filed with the FDA in which a patient experienced prolonged pain and discomfort from the microchip. She later had the implant removed

53 The FDA's letter to the Digital Angel Corporation spelling out potential health risks associated with the VeriChip can be downloaded at: <http://www.spsychips.com/devices/verichip-fda-letter.pdf> The risks are outlined on page 3, paragraph 2. Our report on the letter can be found at <http://www.spsychips.com/devices/verichip-fda-report.html>.

54 U.S. Food and Drug Administration, "A Primer on Medical Device Interactions with Magnetic Resonance Imaging Systems," February 7, 1997. See Section 4.3: Pulsed Radio Frequency Fields. Online at: <http://www.fda.gov/cdrh/ode/primerf6.html>

55 Jansen, JA, et al. "Biological and migrational characteristics of transponders implanted into beagle dogs." *Veterinary Record*. 1999;145:329-333.

56 British Small Animal Veterinary Association. "Microchip Report 2004." Online at: http://www.bsava.com/VirtualContent/85185/Adverse_Reaction_Report_2004PDF.pdf.

57 Le Calvez, S, Perron-Lepage, M-F, Burnett, R. "Subcutaneous microchip-associated tumours in B6C3F1 mice: A retrospective study to attempt to determine their histogenesis." *Experimental and Toxicologic Pathology*. 2006;57:255-265. Scanned copy available at: <http://www.antichips.com/cancer/01-le-calvez-et-al-2006.pdf>

and the pain subsided. For reasons of patient confidentiality, her name cannot be revealed in this document.

Individuals who have voluntarily participated in VeriChip-sponsored research or have participated in any chipping program involving the VeriChip Corporation are urged to contact us if they are experiencing any adverse effects.

Q. Is it possible to remove the VeriChip implant? How difficult is the procedure?

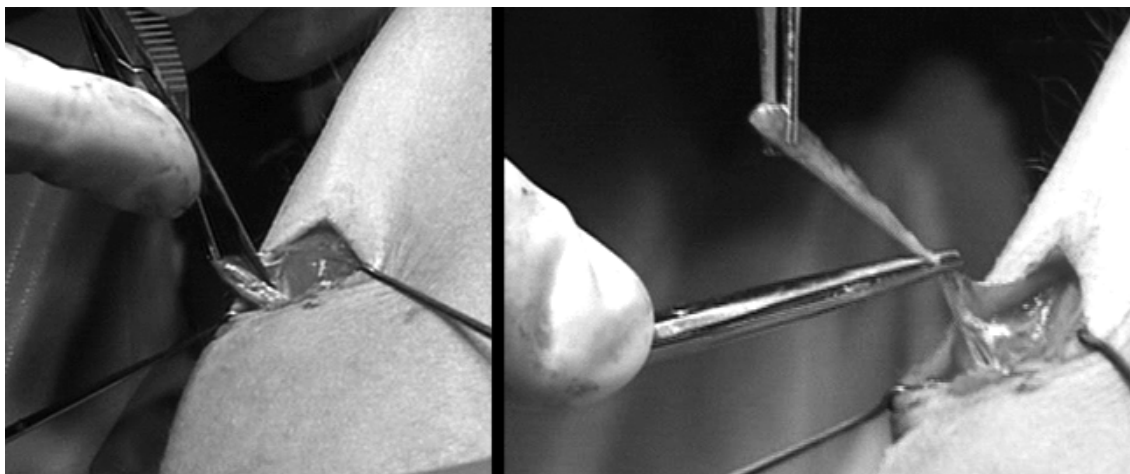
VeriChip CEO Scott Silverman has told the press that removing a VeriChip implant is a simple, almost trivial procedure. In a 2006 interview he said:

*"Should a person request is [sic] removal the microchip can be removed by a simple out-patient procedure. It could be equated to removing a large splinter or a piece of glass."*⁵⁸

— Scott Silverman, CEO, VeriChip Corporation

Those who have actually undergone the chip removal procedure say otherwise. Removing an implanted VeriChip device requires painstaking surgery that has been described by patients as difficult, time-consuming, and expensive. One problem is locating the microchip, which typically cannot be felt under the skin. It is also possible that the chip may have migrated to a different location within the arm or other body part where it was implanted.

Once it has been found, the chip cannot simply be slid out of the body like a piece of glass, since the anti-migration sheath on the implant bonds with subcutaneous tissue. That means the flesh must be cut away from the implant in order to remove it.



VeriChip Removal These frames from a French documentary show a VeriChip being surgically removed from the arm of a journalist. Because the anti-migration sheath on the implant bonds with subcutaneous tissue, the flesh must be cut away from the implant in order to remove it.

Source: <http://www.next-up.org/Newsoftheworld/RFID.php>

CNN reporter Robyn Curnow confirms that chip removal is difficult. She was implanted with a VeriChip in a Spanish night club in 2004 and had the device removed later that year. She reports that the surgery was a challenge for the doctors involved—a far cry from "removing a splinter." Here is her report:

⁵⁸ "RFID Identification Is Only Skin Deep," RFID Product News, May 2006. Online at: <http://www.rfidproductnews.com/issues/2006.05/asktheexpert.php>

Once back home in London, I begin to feel uncomfortable and unsure about my... [microchip implant]. The Baja [Beach Club] Web site assures that getting rid of the microchip is a simple and harmless procedure, something like removing a splinter. But the two doctors I consult in London's Harley Street disagree. Getting the microchip [removed] became serious business.

General practitioner Dr. Stuart Sanders referred me to consultant plastic surgeon Lena Andersson as soon as he realized he could not feel the microchip. It was buried so deep inside my upper arm that Andersson sent me off for an X-ray, and even that did not help the doctors.

Although the microchip was visible on the X-ray, it was impossible to pinpoint the exact location in my arm as it was nowhere near the point of insertion.

Finding it involved surgery at the clinic and a severe dose of post-Baja regret. One night out in Barcelona has permanently seared into my upper left arm. While splayed out on an operating table -- once again anaesthetized -- Andersson removed the chip using a high-tech sensor X-ray and two monitors to guide her to it.⁵⁹

A French journalist also had a VeriChip implant removed and recorded the surgery on film. A photograph from the procedure appears on the previous page.

We are aware of at least one U.S. patient who had a microchip removed (see "Have any complaints been filed with the FDA about the VeriChip?" above). She reported post-operative pain and significant bruising following the removal surgery. Sources we contacted in connection with that case revealed that several other patients who participated in medical trials of the VeriChip have either undergone surgery to have the implants removed or are awaiting such surgery.

Q. Can a VeriChip implant be disabled?

There is no official procedure for disabling an implanted microchip. Because the device has no power source or moving parts to wear out, in theory it could transmit indefinitely.

If a microchip implant is subjected to a strong electromagnetic current it may cease to function. According to field tests, a VeriChip that has gone through a high power MRI scan, for example, may no longer respond to a reader. However, EMF exposure is not a recommended method for disabling an implanted chip, since it could cause the device to heat up in the body and potentially cause internal burns.

Q. Has anyone's chip fallen out?

Yes. Atlanta firefighter John Centola had a chip inserted in his arm at a conference in 2007 that later re-emerged while he was swimming. He discussed this event on camera with Atlanta CBS 46 television,⁶⁰ and in a one-hour radio interview with the author of this FAQ.⁶¹

Chips emerging or being "lost" was a concern raised in several of the animal studies. Rao and Edmondson reported that two of the 140 microchips they implanted in mice later emerged from the animals' bodies. One of the microchips, lodged in the subcutaneous tissue over the animal's lumbar vertebrae, was pushed out slowly through the scar tissue of the injection site during the tenth month after implantation.⁶²

In the Tillmann study, 1.5% of 4,279 (approximately 64) implanted microchips had to be substituted with new transponders when they either ceased functioning or emerged from the

59 Robin Curnow, "The Price to Pay for VIP Status," CNN.com, Oct. 6, 2004. Online at:

<http://edition.cnn.com/2004/TECH/10/05/spark.bajabeach/>

60 Atlanta CBS 46 News, November 2007. Online at: <http://www.youtube.com/watch?v=oQMby-z7tGk>

61 Katherine Albrecht interviewed John Centola on her daily talk radio show on December 5, 2007. Mr. Centola's description of the chip's emergence can be found approximately 26:00 minutes into the audio file archived at: http://mp3.wtprn.com/Albrecht/0712/20071205_Wed_Albrecht1.mp3

animals' bodies and were later found in the softwood of their cages. Most of the chips emerged within the first two days after implantation, but some losses occurred as late as seven months later.

Researcher Keith Johnson also reported that loss was an issue with the implants, stating: "We had a few early in the studies that would migrate out if the wound wasn't healing properly."⁶³

Q. Would VeriChip information be available in a natural disaster?

It may be unwise to rely on a VeriChip implant for critical medical information during or immediately after a natural disaster—or at any other time when the Internet is sluggish or inaccessible. The VeriChip implant contains no medical information about a patient, only a 16-digit ID number. In order to access a patient's records, a medical technician must log onto the Internet to access a remote database. If the Internet is inaccessible, the medical information will not be available. After a disaster such as a hurricane, earthquake, tornado, or terrorist incident, the Internet may be disrupted. Ironically, that is the very time when emergency medical records would most be needed.

The VeriChip Corporation has acknowledged this potential problem, noting that the company could be sued if patients cannot access medical data when needed. On page 23 of VeriChip's SEC registration statement, the company writes: "the database may not function properly if certain necessary third-party systems fail, or if some other unforeseen act or natural disaster should occur." They add that "in the past, we have experienced short periods during which the database was inaccessible."⁶⁴

Q. Would the VeriChip database be available at other times when I need it?

Maybe not, according to VeriChip. The company detailed the risk that a disruption in the network could cause the medical database to be inaccessible:

Interruptions in access to, or the hacking into, our VeriMed patient information database may have a negative impact on our revenue, damage our reputation and expose us to litigation.

Reliable access to the VeriMed patient information database is a key component of the functionality of our VeriMed system. Our ability to provide uninterrupted access to the database, whether operated by us or one or more third parties with whom we contract, will depend on the efficient and uninterrupted operation of the computer and communications systems involved. Although certain elements of technological, power, communications, personnel and site redundancy are maintained, the database may not be fully redundant. Further, the database may not function properly if certain necessary third-party systems fail, or if some other unforeseen act or natural disaster should occur. In the past, we have experienced short periods during which the database was inaccessible as a result of development work, system maintenance and power outages. Any disruption of the database services, computer systems or communications networks, or those of third

62 Rao, GN, Edmondson, J. "Tissue reaction to an implantable identification device in mice." *Toxicologic Pathology*. 1990;18(3):412–416. Scanned copy available at: <http://www.antichips.com/cancer/11-rao-and-edmondson-1990.pdf>

63 Keith Johnson, personal communication (telephone interview), October 13, 2007.

64 VeriChip Corporation, United States Securities and Exchange Commission Form S-1 Registration Statement, February 9, 2007. Online at: <http://www.sec.gov/Archives/edgar/data/1347022/000119312507024937/ds1a.htm>

parties that we rely on, could result in the inability of users to access the database for an indeterminate period of time. This, in turn, could cause us to lose the confidence of the healthcare community and persons who have undergone the microchip implant procedure, resulting in a loss of revenue and possible litigation.

In addition, if the firewall software protecting the information contained in our database fails or someone is successful in hacking into the database, we could face damage to our business reputation and litigation."⁶⁵

— VeriChip Corporation

This is just one risk factor identified by the VeriChip Corporation. In 2007, the company laid out nearly 20 pages of risk factors in its Form S-1 Registration Statement, a document it was required by law to file in conjunction with its public issuance of stock.⁶⁶

Q. Will emergency personnel be able to read my VeriChip in an ambulance?

Not necessarily, according to VeriChip's own "chipping kit" literature. Apparently ambient radio waves like those in ambulances can interfere with the equipment that reads the implanted tags. Here's the company's exact quote:

Areas with ambient radio frequency (RF) emissions, such as mobile transit (ambulances or helicopters), MRI or security scanning equipment could interfere with the ability to read the ID number using a hand held scanner (VeriChip Pocket Reader ®). In such situations the patient and reader should either move away from the area with the high RF activity or, if possible, move or turn off the other RF equipment, and try reading the ID number again.⁶⁷

— VeriChip's chipping kit literature

Although turning off radio communication equipment might allow medical professionals to read the VeriChip implant, it would clearly be dangerous to disable crucial communications systems during a medical emergency. It would seem even more impractical to remove a patient from an ambulance or a helicopter simply to read an implanted microchip.

Q. Could the VeriChip implant break or fail to operate?

Yes. "Failure of the implanted transponder" was one of the risks the FDA identified with regard to the VeriChip. If a patient were to rely on the chip to transmit critical medical information in an emergency, failure of the device could result in serious complications or even death.

Implant failure was an issue raised in the animal studies as well. Rao and Edmondson reported that four of the 140 implants used in their study failed due to microscopic cracks in the weld connecting the antenna leads to the microchips, or leakage of the glass capsules, resulting in fluid accumulation around the microchips.⁶⁸ That works out to a failure rate of almost 3%.

⁶⁵ *Ibid.* p. 23.

⁶⁶ *Ibid.*

⁶⁷ A scanned image of VeriChip's chipping kit literature is available at:

<http://www.spychips.com/verichip/verichip-photos-instructions.html>

⁶⁸ Rao, GN, Edmondson, J. "Tissue reaction to an implantable identification device in mice." *Toxicologic Pathology*. 1990;18(3):412–416. Scanned copy available at: <http://www.antichips.com/cancer/11-rao-and-edmondson-1990.pdf>

Q. What is my legal recourse if I am harmed by the VeriChip?

Unfortunately, you may not have any legal recourse if you are harmed by the VeriChip. Before receiving a microchip, implant recipients are required to sign an agreement that excuses VeriChip from all legal responsibility in the event of injury or harm. In fact, the document states that the VeriChip has no "warranties of merchantability and fitness" for any purpose, and it expressly excuses the company from being sued—even in the event of negligence or breach of contract on the company's part. The VeriChip patient release form reads as follows:

Patient...is fully aware of any risks, complications, risks of loss, damage of any nature, and injury that may be associated with this registration. Patient waives all claims and releases any liability arising from this registration and acknowledges that no warranties of any kind have been made or will be made with respect to this registration. ALL WARRANTIES, WHETHER EXPRESS OR IMPLIED, HOWEVER ARISING, WHETHER BY OPERATION OF LAW OR OTHERWISE, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED AND WAIVED. IN NO EVENT SHALL THE COMPANY BE LIABLE TO PATIENT FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOST INCOME OR SAVINGS) ARISING FROM ANY CAUSE WHATSOEVER, EVEN IF ADVISED OF THEIR POSSIBILITY, REGARDLESS OF WHETHER SUCH DAMAGES ARE SOUGHT BASED ON BREACH OF CONTRACT, NEGLIGENCE, OR ANY OTHER LEGAL THEORY. [Emphasis in the original.]

The legal language used in this agreement is extraordinary. People like firefighter John Centola report that they were not informed of any risks, complications, risks of loss, damage, or potential injury when they received the implant. Mr. Centola was also unaware that he had waived his right to a legal remedy in the event he was harmed by the VeriChip.

Q. Given the risks of the VeriChip, is there an alternative way for people to communicate their medical history to emergency medical responders?

Yes, the MedicAlert bracelet has served the medical information needs of the public for over 50 years. It is a non-invasive metal bracelet that allows patients to communicate medical conditions to emergency room and medical personnel in the event of an emergency.

MedicAlert has partnered with the Alzheimer's Foundation of America to develop a special teal-colored bracelet that specifically addresses the needs of Alzheimer's patients. The MedicAlert bracelet communicates vital medical information and can be used to identify a patient in a wandering incident. The bracelet is not invasive and eliminates the need to implant anything into the body.

More importantly, because a MedicAlert bracelet does not require access to the Internet, patients with life-threatening conditions are assured that their critical medical information is with them at all times.

VI. OTHER QUESTIONS ABOUT ANIMAL IMPLANTS

Q. Should pet owners be worried about the implants in their pets causing cancer?

There have been no large-scale, statistically valid, clinically controlled, experimental studies involving microchip implants in dogs and cats, so we know very little about their long-term safety. However, the fact that we have not seen an epidemic of cancers in pets would suggest that only a small number of pets will be affected. As the chip-removal procedure is likely to be both costly and invasive, pet owners may wish to leave the implanted microchips intact within their animals unless a problem surfaces.

Owners of pets that have been implanted should regularly check the area for anything unusual. Lumps, fibrous tissue, heat, and tenderness, for example, could all be indications of a problem. Note that the microchips have a tendency to migrate from their original implantation site, so pet owners may have to check the surrounding area carefully as well.

If something unusual is found, it should be reported immediately to a veterinarian, and tests should be done to rule out cancer. The pet owner may be the key to detecting a problem in the early stages and saving the life of a pet. In the two published cases where dogs developed tumors around and attached to implants, it was the owners' astute eye and probing fingers that originally found the cancer, not a veterinarian.^{69,70} The only indication that there was a problem was the lump; all other laboratory tests came back within normal ranges.

Q. My dog has cancer in another part of the body. Could it be related to the microchip?

It is not likely that the microchip is the cause of your dog's cancer. The chip-induced cancers reported in the literature formed around the microchips themselves, not in other parts of the body. If a malignancy had formed around the implant and grown large enough to metastasize (spread) to another part of the body, you would probably have been able to feel the initial lump at the implant site with your fingers.

While it is possible that a chip-induced tumor could eventually metastasize to another part of the body, unless your dog has a sarcoma or related tissue cancer at the site of the microchip, it is not likely that the chip has anything to do with cancer elsewhere. A biopsy of the tumor could help diagnose its source and either confirm or rule out that possibility.

Q. Does the injection procedure pose a risk to pets?

It can. The British Small Animal Veterinary Association reports an incident in 2004 when a struggling kitten died after being implanted with a microchip. An autopsy revealed that the microchip had been accidentally inserted into the kitten's brain stem.⁷¹ A similar error caused severe neurological damage to a cat when a microchip was accidentally injected into its spinal

69 Vascellari, Melchiotti, & Mutinelli, 2006. "Fibrosarcoma with typical features of postinjection sarcoma at site of microchip implant in a dog: Histologic and immunohistochemical study." *Veterinary Pathology*. 2006;43:545-548. Scanned copy available at: <http://www.antichips.com/cancer/02-vascellari-et-al-fibrosarcoma-2006.pdf>

70 Vascellari et al., 2004. "Liposarcoma at the site of an implanted microchip in a dog." *The Veterinary Journal*. 2004;168:188-190. Scanned copy available at: <http://www.antichips.com/cancer/03-vascellari-et-al-liposarcoma-2004.pdf>

71 British Small Animal Veterinary Association. "Microchip Report 2004." Online at: http://www.bsava.com/VirtualContent/85185/Adverse_Reaction_Report_2004PDF.pdf

column.⁷² Permanent neurological damage from microchip implants has also been reported in horses.

Even researchers who regularly implant animals can make serious errors. Researchers Rao and Edmondson report that 5% (7 of 140) of microchips implanted into the backs of mice were later recovered near the animals' kidneys.⁷³ Another researcher admitted that "occasionally some [microchips] would be inserted too deep, the needle that put them in was probably held at the wrong angle."⁷⁴

Q. I've heard that implants can migrate. Is that true?

Yes, chips can migrate or tunnel through the flesh to a different part of the body. For details and evidence, please refer to the human chipping section of this document, "What is meant by 'migration?'" on page 21.

Q. What other problems can implanted microchips cause in animals?

In addition to nerve damage and the potential for migration discussed previously, microchip implants can lead to infection, abscess, abnormal growths and other adverse tissue reactions. The photographs below document just a few of the many instances in which this has occurred in horses.

Horses injured by microchip implants

Left and center: Infection surrounding the site of a microchip implant.

Right: Fist-sized growth surrounding a microchip implant.

Source: <http://www.invisio.nl/antichip/fotos-eng.htm>



Q. What alternatives are there to chipping animals?

There are other ways to help ensure that lost or runaway pets are returned to their owners. A well-made collar and a clear, legible tag with the owner's contact information are effective tools that

72 Platt, S, et al. "Spinal cord injury resulting from incorrect microchip placement in a cat." *Journal of Feline Medicine & Surgery*. 2006;9(2):157–160.

73 Rao, GN, Edmondson, J. "Tissue reaction to an implantable identification device in mice." *Toxicologic Pathology*. 1990;18(3):412–416. Scanned copy available at: <http://www.antichips.com/cancer/11-rao-and-edmondson-1990.pdf>

74 Dr. Keith Johnson, personal communication (telephone interview), October 13, 2007.

have worked for generations of pet owners. Pedigreed dogs, horses, and farm animals can also be tattooed, and there are registries that will store their DNA for identification purposes.

Should a pet go missing, there are now services and advice centers that make use of the latest technology and knowledge of missing pet behavior to help people locate missing animals. The book "The Lost Pet Chronicles" by real-life pet detective Kat Albrecht⁷⁵ provides a great overview of this service.

⁷⁵ Though they share a name, pet detective Kat Albrecht, author of "The Lost Pet Chronicles," is not related to Katherine Albrecht, the author of this document.

VII. SECURITY AND PRIVACY CONCERNS

Q. Does the VeriChip raise privacy issues?

Yes, there are serious privacy concerns associated with remotely-readable microchip implants, including the risk that the implant could be surreptitiously used for tracking purposes through a network of local readers.

Although the VeriChip does not contain an individual's name, it does contain a unique ID number that can be easily matched to the person. If every time Joe Smith appears, the number #1234567 also appears on a scanner, it can be deduced that #1234567 means "Joe Smith." When that number is later seen at a different location, say, walking through a doorway equipped with an implant reader, an observation can be made that Joe Smith just passed by.

Q. How easy is it to read the information on someone else's VeriChip?

It is actually quite easy. The data on a VeriChip implant is transmitted through the air via radio waves and can be easily picked up by anyone who holds a reader device within a few inches of the implant. A hacker with an electronics background can make such a reader using readily available electronic parts.

The VeriChip Corporation acknowledges that its database could fall prey to hackers, and that such an attack could "have a negative impact on our revenue, damage our reputation and expose us to litigation." The company's SEC registration statement also expresses the concern that "we could face damage to our business reputation and litigation" if "the firewall software protecting the information contained in our database fails or someone is successful in hacking into the database."⁷⁶

Q. Why does it matter if a hacker or a criminal gets a 16-digit number?

Criminals or stalkers wouldn't need access to the VeriChip database of information to track people through their implants. They could simply skim people's VeriChip ID numbers and create their own database of information about the chipped individuals.

"Compromised information security" was one of the risks the FDA identified in relation to the VeriChip. To understand why it's not a good idea to beam out a unique and persistent ID number, it's helpful to think of the social security number (SSN). You wouldn't print your SSN across the front of your T-shirt because you know the number is uniquely linked to you and can be used to access personal information about you. You would not want a VeriChip implant beaming out a unique personal ID number for the same reason.

What's more, if hackers can read the 16-digit number from a person's implant, they can duplicate it and begin emitting the same number for their own use in a high-tech form of identity theft.

Q. Could a criminal really duplicate the information on someone else's VeriChip?

Yes. After skimming the information with a hand-held reader, it would be possible to duplicate the signal and then pose as the chipped individual for criminal purposes. Two separate security

⁷⁶ VeriChip Corporation, United States Securities and Exchange Commission Form S-1 Registration Statement, February 9, 2007. Online at: <http://www.sec.gov/Archives/edgar/data/1347022/000119312507024937/ds1a.htm>

researchers, Jonathan Westhues (in 2006)⁷⁷ and Adam Laurie (in 2007)⁷⁸, have demonstrated this capability in public.

Q. Could the VeriChip help secure office buildings and nuclear power plants?

No. Though the VeriChip Corporation has marketed its product as a way to secure sensitive facilities like nuclear plants, it would be a very bad idea. As discussed earlier, a criminal could rather easily exploit the vulnerabilities of a VeriChip-based security system to duplicate an employee's chip signal and gain access to a secure facility. For this reason, it is inadvisable to use a VeriChip implant device for building access or other security purposes.

Q. Could the VeriChip prevent kidnappings, find lost hikers, or rescue captured soldiers?

No. The VeriChip system is not an "eye in the sky" that can remotely pinpoint someone's location. The read range on a VeriChip implant is typically less than 12", so a scanner would have to be very close to a chipped person to read his or her implanted chip. Not only could a VeriChip not be scanned from a satellite, it couldn't even be scanned from across a room.

⁷⁷ • Westhues explains how its done here: <http://cq.cx/vchdiy.pl>

• Our press release on Westhues' VeriChip hack can be found online at <http://www.spsychips.com/press-releases/verichip-hacked.html>

• We saw it with our own eyes here: http://www.spsychips.com/blog/2006/03/cloning_the_verichip.html

⁷⁸ Hines, M., "Human Implant RFID gets owned." *Infoworld*, March 25, 2007. Online at: http://weblog.infoworld.com/zeroday/archives/2007/03/human_implant_r.html

VIII. CULTURAL AND RELIGIOUS ISSUES

Q. I've heard that some Christians object to the VeriChip. Why is that?

Many Christians believe that the VeriChip closely resembles or presages the "mark of the beast" described in Revelation, the last book of the Bible. Their concerns stem from a biblical passage describing the mark of the beast as follows:

And he [a corrupt world ruler] causeth all, both small and great, rich and poor, free and bond, to receive a mark in their right hand, or in their foreheads:

And that no man might buy or sell, save he that had the mark, or the name of the beast, or the number of his name.

Here is wisdom. Let him that hath understanding count the number of the beast: for it is the number of a man; and his number is six hundred threescore and six.

— Revelation: 13:16-18

The question of how a number could be marked into the body and used to buy and sell has perplexed Christian scholars for two millennia. The fact that technology now makes such a system theoretically possible is of particular significance to Christians, who have been mandated by their faith not to participate in such a payment system. However, one needn't be a Christian to find the Revelation similarities uncanny. From an academic and historical perspective alone, the development is noteworthy.

Q. What do those Christians believe will happen to people who take the mark of the beast?

The Bible describes punishments for people who take the mark of the beast and worship the beast or its image, and rewards for those who refuse to do so, as follows:

Physical Punishment: A painful sore will afflict the marked individuals

And I heard a great voice out of the temple saying to the seven angels, Go your ways, and pour out the vials of the wrath of God upon the earth.

And the first went, and poured out his vial upon the earth; and there fell a noisome and grievous sore upon the men which had the mark of the beast, and upon them which worshipped his image.

— Revelation 16:1-2

Spiritual Punishment - Marked individuals will receive the wrath of God

And the third angel followed them, saying with a loud voice, If any man worship the beast and his image, and receive his mark in his forehead, or in his hand, the same shall drink of the wine of the wrath of God, which is poured out without mixture into the cup of his indignation; and he shall be tormented with fire and brimstone in the presence of the holy angels, and in the presence of the Lamb

and the smoke of their torment ascendeth up for ever and ever and they have no rest day nor night, who worship the beast and his image, and whosoever receiveth the mark of his name.

— Revelation 14:9-11

Rewards for those who refuse to take the mark of the beast

And I saw thrones, and they sat upon them, and judgment was given unto them: and I saw the souls of them that were beheaded for the witness of Jesus, and for the word of God, and which had not worshipped the beast, neither his image, neither had received his mark upon their foreheads, or in their hands; and they lived and reigned with Christ a thousand years.

— Revelation 20:4

Q. Is the VeriChip actually being used for buying and selling today?

It was at one point. Until the summer of 2007, the Baja Beach Club, a discotheque with one location each in Barcelona, Spain, and Rotterdam, Holland, was implanting patrons with VeriChip devices linked with pre-paid accounts to pay for drinks. Conrad Chase, then the owner of the Baja Beach Club chain, at one time expressed interest in piloting an implant-based credit card, saying:

*"We are in negotiations with a major manufacturer of credit cards and we would like to do a pilot system—a test system—actually using it as a credit card where you could pay with your credit card having it implanted under your skin."*⁷⁹

Since that time, the Baja Beach Club facilities have been sold. The new owner is no longer using the VeriChip system.

Q. Is it a violation of Jewish law to receive a VeriChip implant?

Many Conservative and Orthodox Jews believe that cutting, piercing, or marking the flesh is contrary to B'tzelem Elohim, the notion that people were made "in the image of God," and therefore their bodies should not be altered. Implanting a microchip may also invoke the Jewish prohibition against tattooing and other body marking that stems from the following Torah passage:

"You shall not make gashes in your flesh for the dead, or incise any marks on yourselves: I am the Lord."

— Leviticus 19:28

This prohibition is widely observed in Orthodox and Conservative Jewish communities. The Conservative Jewish Solomon Schechter High School of Westchester, NY, for example, prohibits students from receiving either piercings or tattoos:

Other than piercing to female ears, all other noticeable piercing of the body are prohibited. Additionally, tattoos or other permanent marks made on the body are prohibited.

⁷⁹ Drew Hemment video interview of Baja Beach Club principal Conrad Chase, June 19, 2004. Available online at <http://www.youtube.com/watch?v=DuaJBrNp7eA>

*These rules are based upon the modesty, respect, and dignity accorded the human body by halacha (Jewish law) deriving from the belief that all men and women are created B'tzelem Elokim, 'in the image of God.'*⁸⁰

Another Jewish publication describes the issue as follows:

One of the biggest concerns of adding a piercing or a tattoo to the body in Jewish Law is the fact that we are distorting our bodies and altering it from its natural form, the form that was made in the image of G-d....

*According to the Torah, we were all made in the image of G-d, and to change or mutilate it in any way is looked down upon. G-d made us the way He hypothetically wanted us to look like, so the fact that we would want to change ourselves is, in a way, disrespectful. According to the United Synagogue for Conservative Judaism, the Torah states that, "You shall not make gashes in your flesh for the dead, or incise any marks on yourselves: I am the Lord." (Leviticus 19:28). This is the pasuk that specifically tells us, as Jews, that we are not supposed to make changes to our bodies. In both present day and in history, such "mutilation" is disapproved of.*⁸¹

Though it is not explicitly stated, these communities would likely frown on body modification through microchip implants.

Q. Do other faith traditions prohibit or discourage the use of microchip implants?

It appears that Islam has a similar prohibition against body modification to that found within the Jewish tradition described above. Tattoos and other body modifications are defined as "haram" or "haraam," an Arabic term meaning "forbidden," under rules set forth in the sahih hadiths, or oral traditions relating to the words and deeds of the Islamic prophet Muhammad.

A complete analysis of all world religions is beyond the scope of this document. However, the author welcomes information on this subject from experts and adherents of other faiths.

80 Solomon Schechter High School Student-Parent Handbook 2005-2006 Available online at <http://www.solomon-schechter.com/HS%20Handbook%2005-06.pdf>

81 "Tattoos, Piercing, and Jewish Law." *Kol Tzafon*, February 12, 2006, Issue 4

IX. BIG BROTHER IMPLICATIONS

Q. Could the VeriChip be used to track someone's movements?

Yes, with a network of local readers the VeriChip could be used to monitor an individual's whereabouts. Even though the implant has a relatively short read range, readers could be placed in strategic locations to identify chipped people as they pass by. VeriChip has developed doorway readers specifically for this purpose.

Q. Have employers required workers to have VeriChip devices implanted?

We are aware of two cases of workers being chipped in order to perform their jobs. In 2004, the office of the Attorney General of Mexico chipped 18 of its workers (not 160 as was widely reported⁸²) and required that they use the chips to gain access to a secure records room.

In 2006, a video surveillance company called City Watcher (which has since closed) implanted two of its workers for the same reason.

Q. Does the U.S. government want to chip the public?

To the best of our knowledge, no current member of the United States government has seriously suggested chipping the public. However, at least two high-ranking government-related individuals have discussed chipping, and that's cause for concern.

The first is Tommy Thompson, former Secretary of Health and Human Services and one-time candidate for the 2008 Republican presidential nomination. Thompson was in charge of the FDA when it approved the VeriChip for medical purposes in 2004, then went on to become member of the VeriChip board of directors until March 2007.

In public appearances, Thompson has suggested injecting microchips into Americans to link to their electronic medical records, saying:

*"It's very beneficial and it's going to be extremely helpful and it's a giant step forward to getting what we call an electronic medical record for all Americans."*⁸³

The second government official to discuss chipping is U.S. Senator Joe Biden, who made this unnerving comment to Justice John Roberts during his Supreme Court Confirmation hearings on September 12, 2005:

*"Can a microscopic tag be implanted in a person's body to track his every movement? There's actual discussion about that. You will rule on that—mark my words—before your tenure is over."*⁸⁴

— U.S. Sen. Joe Biden

82 See our press release: "VeriChip RFID Implants in Mexican Attorney General's Office Overstated," November 29, 2004. Online at: <http://www.spychips.com/press-releases/mexican-implant-correction.html>

83 This statement was made in a televised interview with CBS MarketWatch in July 2005. A transcript of Thompson's entire MarketWatch interview can be found at <http://www.spychips.com/devices/tommythompsonverichip.html>
A video clip of Thompson making this statement can be found at:
http://www.spychips.com/devices/images/mw_160w_50q_17sec.avi

84 See www.gpoaccess.gov/congress/senate/judiciary/sh109-158/15-18.pdf
To find the microchip comment, see the top of p.4, labeled "p. 18" in-line.

Senator Biden was not entirely accurate, however. The antenna on a "microscopic tag" could not be used for tracking purposes, given the extremely short read range of such a device.

Q. Has the president of Colombia suggested chipping people?

It is unclear whether Colombian president Alvaro Uribe would like to chip the Colombian people or not, but he has made it clear that he is comfortable with the idea. According to testimony by U.S. Senator Arlen Specter, Uribe offered to microchip Colombian guest workers as they leave Colombia to work in the United States. Here are Specter's comments, as recorded in the U.S. Congressional Record:

*President Uribe said he would consider having Colombian workers have microchips implanted into their bodies before they are permitted to enter the United States to work on a seasonal basis. I doubted whether the implantation of microchips would be effective since the immigrant worker might be able to remove them.*⁸⁵

— U.S. Senator Arlen Specter

Colombian citizens were rightly upset by these comments. Perhaps out of political self-preservation, Uribe later refused to confirm the statements.⁸⁶

It should be noted that Sen. Specter did not reject the idea of human chipping on humanitarian, human rights, privacy, or health grounds, but for a more practical reason—he apparently wants the chips to be more difficult to remove.

Q. Are babies being implanted with VeriChip microchips?

As of this writing, there are no credible reports of babies being implanted with VeriChip or other implantable microchip devices. However, hospitals around the country (including half of the hospitals in Ohio) have recently begun affixing an RFID bracelet known as the "Xmark" onto babies' ankles at birth for identification and anti-abduction purposes. The RFID ankle bracelets are distributed by Xmark Corporation, a wholly-owned subsidiary of VeriChip Corporation. In May 2008, the VeriChip Corporation entered negotiations to sell the Xmark division to Stanley Works.⁸⁷

It should be noted that baby abductions from hospitals are extremely rare. According to a January 2003 report by the National Center for Missing and Exploited Children (NCMEC), out of approximately 4.2 million births per year at 3,500 birthing centers in the United States, abductions by non-family members are estimated between 0 and 12 children per year. Of those, the baby is reunited with the mother 95 percent of the time.⁸⁸

Ironically, relying on RFID to prevent baby abductions could actually wind up making a rare occurrence even more likely. Once hospital staffers rely on computer systems to track the human

85 US Congressional Record, April 25, 2006 (Senate), Page S3494-S3498, DOCID:cr25ap06-224, From the Congressional Record online via GPO Access [wais.access.gpo.gov] available at <http://frwebgate2.access.gpo.gov/cgi-bin/waisgate.cgi?WALSdocID=627302226634+0+0+0&WALSaction=retrieve>

86 Associated Press. "Report: Colombian President Would Consider Immigrant Tracking With Microchips," *Fox News*. May 4, 2006. Online at: <http://www.foxnews.com/story/0,2933,194337,00.html>

87 Associated Press. "VeriChip to sell Xmark to Stanley Works for \$45M," *Boston Globe*, May 15, 2008. Online at: http://www.boston.com/business/healthcare/articles/2008/05/15/verichip_to_sell_xmark_to_stanley_works_for_45m/

88 John Rabun. "For Healthcare Professionals: Guidelines for Prevention of and Response to Infant Abductions," Alexandria: National Center for Missing & Exploited Children, 2003, p.92.

inventory in their care, they are likely to become less vigilant. According to the NCMEC, most abductions occur in larger, more impersonal hospitals.

Q. Could a microchip be implanted during a routine vaccination or other injection?

No. The VeriChip is a fairly large device that requires a special 12-gauge needle known as a cannula for implantation. Vaccines and other routine injections, in contrast, use much smaller needles, typically between 22 and 25 gauge in size. (Note: The larger the gauge number, the smaller the needle.)

In fact, the VeriChip cannula is so large that implantation would be extremely painful if it were not preceded by several injections of local anesthetic. The anesthetic is administered through a much smaller, standard-sized hypodermic needle prior to the chipping procedure.

Though nearly microscopic RFID tags have been developed by Hitachi and other companies, those devices are not encapsulated in glass and would not be suitable for human implantation. Such "dust-sized" RFID tags also have extraordinarily small antennae and are unable to transmit a signal more than a few millimeters. In order to read their signals, RFID readers have to get so close that they almost make contact with the tags. Extremely small RFID tags would be useless for human tracking or identification purposes, since they could not be read from outside the body.

Q. Has anyone ever been chipped without consent?

Yes. As part of an ongoing medical experiment with the VeriChip Corporation, a care facility called Alzheimer's Community Care, Inc. in West Palm Beach, Florida, has been implanting elderly patients with VeriChip devices since 2007.⁸⁹ This chipping occurs with the consent of family members and guardians, but in many cases without the fully informed consent of the patients themselves, as their disease prevents them from understanding or consenting to the procedure. It is also likely that patients and their family members are not being told that the implants are known to cause cancer in laboratory animals, since VeriChip officials have repeatedly denied this fact.

Several years ago, the VeriChip Corporation (then known as Applied Digital Solutions) also attempted to chip mentally incapacitated adults at the Orange Grove Center in Tennessee.⁹⁰ Those patients would likewise have been unable to grant informed consent due to their disability. Public outcry and opposition from family members caused the center to cancel the plan.

To the best of our knowledge, no mentally competent adult or child has been forcibly implanted with a VeriChip implant or other tracking or monitoring device without consent.

Q. I believe I have been implanted with a microchip. Can you help me?

Probably not. Unless you are part of a VeriChip trial (in which case we would very much like to hear from you), we are unlikely to be much help. We are not specialists in finding implants in people and have never done so.

The good news is that your concerns are probably baseless. There would be little to gain from surreptitiously implanting someone with a VeriChip, since its read range is just inches, and the device cannot be accessed remotely. An implanted VeriChip could not emit, record, or transmit sounds, nor could it control a person's thoughts, movements, or physical state.

89 Claire Swedberg, "Alzheimer's Care Center to Carry Out VeriChip Pilot," I. May 25, 2007. Online at: <http://www.rfidjournal.com/article/articleview/3340/1/1/>

90 "Tennessee Center Considers Offering VeriChip Technology," *NPR All Things Considered*, November 14, 2005. Online at: <http://www.ihealthbeat.org/articles/2005/11/14/Tennessee-Center-Considers-Offering-VeriChip-Technology-NPRs-All-Things-Considered-Reports.aspx?archive=1>
See also: Joseph Shapiro. "Ethical Questions Raised over Implantable Chips." *NPR All Things Considered*, November 12, 2005. Online at: <http://www.npr.org/templates/story/story.php?storyId=501073>

An X-ray would reveal the presence of an implanted VeriChip device, as can be seen from X-ray photographs of microchips that hobbyist Amal Graafstra has implanted in his hands.⁹¹ However, we have received no credible evidence of any person being implanted with a microchip without his or her knowledge and consent. As a result, we now only accept inquiries from the doctors or attorneys of individuals who are concerned about surreptitious chipping.

Q. Are pet owners being forced to chip their pets?

Yes, in many places pet owners are being forced to have microchips implanted into their animals. Governments, including those of Portugal, New Zealand, Singapore, Bangkok, Los Angeles County, and El Paso, Texas, have passed ordinances requiring that all dogs under their jurisdiction be microchipped (though in New Zealand, farm dogs are specifically exempted). El Paso has even extended the chipping mandate to cats and ferrets. Other cities and towns across the U.S. are considering similar mandates.

Fortunately, some government officials, such as those in Waco, Texas, have opted not to impose mandatory chipping on pet owners in light of the evidence linking microchips to cancer in laboratory animals.⁹²

Q. What about tagging criminals with VeriChip?

A VeriChip implant would have little value in deterring crime, since its read range is only a few inches. But even if implants could one day be used to remotely identify and track people, the medical risks of implantation alone would be enough to prevent their use.

There are also serious societal issues to consider. When discussing technologies with a clear potential for abuse, we would do well to heed this Chinese warning: *"The fire you kindle for your enemy often burns you more than it burns him."*

If mandatory chipping were allowed for prisoners, government-mandated chipping of others would soon follow. It would not be long before lawmakers began mandating chips for nuclear power workers, scientists handling biological or chemical agents, drivers transporting hazardous materials, gun owners, people working with children, people preparing food for public consumption, and so on, until it eventually included all of us.

Being tagged and tracked by government officials would be a privacy and civil liberties nightmare that could spell the end of privacy and freedom. There are some lines that should never be crossed in a free and democratic society. Mandatory microchipping—of anyone—is one of them.

91 Amal Graafstra. "Hands On: How Radio-Frequency Identification and I Got Personal," *IEEE Spectrum*, March 2007. Online at: <http://www.spectrum.ieee.org/mar07/4940>

92 Mike Anderson. "Waco City Council Puts off Vote on Pet Microchipping," *Waco Tribune*. March 4, 2008. Online at: http://www.wacotrib.com/blogs/content/shared-gen/blogs/communities/breakingnews/entries/2008/03/04/the_waco_city_council_puts_off.html

X. SOLUTIONS

Q. What should implanted patients and their doctors do?

There are many unanswered questions about the safety of microchip implants in human beings, but what we know from animal studies is disquieting. In light of the fact that microchip implants can cause serious adverse reactions in animals, the practice of chipping human beings should be immediately discontinued until the tumorigenesis process is more fully understood.

In addition, all patients, members of the public, and medical volunteers who have been implanted with microchips to date (an estimated 300 people in the United States and 2,000 people worldwide) should be immediately informed in writing of the causal link between microchips and cancer in rodents and dogs. Implanted individuals should be offered a procedure for microchip removal at the expense of the facility that provided the implant. Following the advice of Jennings et al., the tissue surrounding all removed implants should be examined for cancerous or precancerous changes.⁹³

People who choose to retain the microchips should routinely examine the tissue surrounding the implant for swelling, inflammation, evidence of chip migration, and pain. Any unusual sensations, lumps, or other abnormalities should be immediately reported to a doctor and analyzed for cancerous or pre-cancerous changes. All adverse reactions, whether related to cancer or other problems, should be immediately reported to the FDA for disclosure in the public record.

Q. What should policy makers do?

Given the fact that microchips have been shown to cause malignant tumors in laboratory rodents, and published research shows that malignant tumors can form surrounding or adjacent to microchip implants in dogs, it is strongly recommended that policy makers reverse all policies that mandate the microchipping of animals under their jurisdiction or control. These include ordinances passed by state and local authorities, policies implemented at animal shelters, and formal positions adopted by animal welfare, affinity, and interest groups across the United States and around the globe.

It is the opinion of this researcher that mandatory microchipping ordinances should be repealed and replaced with a voluntary system of microchipping at the discretion of pet owners. Any pet owner who chooses to have a microchip implanted in his or her animal should be fully informed of the potential risks of the procedure. No one should be forced by law or otherwise coerced into implanting an animal against his or her conscience or medical judgment.

Q. What should veterinarians do?

Veterinary offices are one of the most common places where implant procedures are performed. Since veterinarians are often the primary point of contact for pet owners on the topic of microchipping, veterinarians should familiarize themselves with the research findings and carefully consider the potential for adverse reactions before recommending implants for their patients.

Pet owners should be clearly advised of the research linking the microchip to cancer in rodents and dogs when seeking advice about chipping and before having the procedure performed on their pets.

93 "All material removed from patients in proximity to foreign implants should be examined histologically." Jennings, T, et al. "Angiosarcoma associated with foreign body material. A report of three cases." *Cancer*. 1988;62(11):2436–2444. (The quote appears on p. 2444.)

In the case of animals that have already been implanted, Vascellari⁹⁴ and others suggest that veterinary surgeons should palpate the tissue surrounding microchip implants as part of routine medical care. Any lumps or inflammation should be investigated for cancerous or pre-cancerous changes. To avoid the complicating risk of injection-related sarcoma, veterinarians should also avoid administering vaccines or other injections at or near the site of an implanted microchip.

Finally, veterinarians should advise pet owners to routinely examine the site of the implanted microchip and immediately report any abnormalities.

Q. What should pet owners do?

As stated earlier in this document, owners of pets that have been implanted should regularly check the chipped area for any abnormal lumps or swelling. If something unusual is found, it should be reported immediately to a veterinarian, and tests should be done to rule out cancer.

If a pet is not currently microchipped, it may be best to keep it that way. Based on published research linking microchip implants with cancer in rodents and dogs, pet owners may wish to carefully consider whether the benefits of implants are worth the potential health risks such implants appear to pose.

It is the opinion of this researcher that all further implantation of pets should be halted until the existing population of chipped animals is carefully assessed for adverse reactions, including cancer.

Q. Should the use of microchips implants in people be restricted?

Yes, we believe the use of microchip implants and similar devices in people should be immediately discontinued. At a minimum, the procedure should be strictly limited to individuals who are capable of granting fully informed, written, legal consent after being informed of the potential health risks associated with the device. Implantation should never be mandatory, coerced, or obtained through any incentive or threat of discrimination.

Q. Are lawmakers concerned about the issue?

Yes. A number of states, including Wisconsin, North Dakota, and California, have passed laws prohibiting the forced implantation of microchips in humans. Lawmakers in several other states, including Missouri, California, Georgia, New Hampshire, Ohio, Oklahoma, Colorado, Washington, and Florida, have introduced similar legislation.

Q. Can you recommend model legislation to address these concerns?

Yes. We have authored a model bill called the Bodily Integrity Act designed to raise the bar on implants and other tracking devices. Here are some of the key features of the bill:

- It expands the definition of "tracking device" to include devices other than microchips. This is necessary in light of new technologies like the Somark remote-readable RFID tattoo.⁹⁵
- It prohibits employers, government bodies, HMOs, or others from requiring implants.
- It prohibits a parent or guardian from chipping a child or other dependent or incapacitated person.
- It prohibits the chipping of a person's remains after death.
- It prohibits discrimination by employers or others on the basis of chip implants.

94 Vascellari, M, et al. Liposarcoma at the site of an implanted microchip in a dog. *The Veterinary Journal*. 2004;168:188–190. Scanned copy available at: <http://www.antichips.com/cancer/03-vascellari-et-al-liposarcoma-2004.pdf>

95 See Somark Innovations, online at <http://www.somarkinnovations.com/> for details.

The bill is written in easy-to-understand language and is just one page in length. It can be downloaded from our website at <http://www.antichips.com/legislation.htm>

Q. Where can I go to learn more about microchip implants and RFID?

CASPIAN's⁹⁶ human chipping website at AntiChips.com contains detailed information about microchip implants and lists steps you can take to get involved. Our RFID (radio frequency identification) website, Spychips.com, has many implant-related press releases and research reports authored by Dr. Katherine Albrecht and Liz McIntyre dating back to 2003. The Spychips website also contains a wealth of information about plans to use RFID in consumer products, and addresses the dangers such plans pose to privacy and civil liberties.

Our bestselling book "Spychips: How Major Corporations and Government Plan to Watch Your Every Move with RFID" lays out our research into over 30,000 RFID-related documents, technical specs, white papers, news reports, patent filings and more. *Spychips* is the definitive critique of RFID and makes a compelling argument against the surveillance future the technology threatens to create. The book is available through booksellers everywhere, and signed copies can be ordered from the Spychips website.

Q. Is there anything else I can do to help?

Yes. Please distribute this literature widely and direct your colleagues to our websites. You can also join CASPIAN, sign up as a volunteer, and subscribe to our free email updates at either AntiChips.com or Spychips.com.

Also, if you find this report valuable, please consider supporting our ongoing work with a monetary gift. As we have an all-volunteer staff and receive no outside funding, your generosity makes it possible for us to continue to bring CASPIAN's work to the public. Gifts can be made through the website or by contacting us directly.

⁹⁶ CASPIAN stands for "Consumers Against Supermarket Privacy Invasion and Numbering." It is a 15,000 member grass-roots consumer privacy organization founded by Dr. Katherine Albrecht in 1999.

XI. ABOUT US

Q. Who wrote this document?

This document was written by Katherine Albrecht, Ed.D. Dr. Albrecht is widely recognized as one of the world's leading experts on consumer privacy, retail issues, and radio frequency identification technology, or RFID. Katherine holds a Doctorate in Education from Harvard University and is the director of CASPIAN, a 15,000 member consumer privacy organization she founded in 1999. She also hosts a daily syndicated radio program called "Uncovering the Truth," and co-authored the award-winning RFID book "Spychips."

Since 2003, Dr. Albrecht has led the fight against unethical RFID use in products and in people. She regularly testifies before lawmakers around the globe, including the Federal Trade Commission, the European Commission, the Office of the Canadian Privacy Commissioner, and various state legislatures, and was appointed by New Hampshire Governor John Lynch to serve on that state's RFID Study Commission.

Dr. Albrecht has given over two thousand television, radio and print interviews to news outlets like CNN, NPR, Good Morning America, Business Week and the London Times, to name just a few. Executive Technology Magazine calls her "perhaps the country's single most vocal privacy advocate" and Wired magazine calls her the "Erin Brockovich of RFID."

Q. Are you available to speak publicly on this issue?

Yes. CASPIAN Founder and Director Dr. Katherine Albrecht is available to provide expert testimony to lawmakers, grant interviews to the press, and address civic, religious, and business organizations. Her contact information can be found at the AntiChips.com and Spychips.com websites.
